



For Supervisor's use only

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90148



NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA



National Certificate of Educational Achievement
TAUMATA MĀTAURANGA Ā-MOTU KUA TAEA

Level 1 Mathematics, 2004

90148 Sketch and interpret graphs

Credits: Three
9.30 am Thursday 11 November 2004

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should answer ALL the questions in this booklet.

You should show ALL working.

If you need more space for any answer, use the pages provided at the back of this booklet and clearly number the question.

Check that this booklet has pages 2–12 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Achievement Criteria			For Assessor's use only
Achievement	Achievement with Merit	Achievement with Excellence	
Sketch, and interpret features of, graphs. <input type="checkbox"/>	Sketch, and interpret features of, graphs. <input type="checkbox"/>	Determine and apply an appropriate model for a situation involving graphs. <input type="checkbox"/>	
	Write equations for linear graphs. <input type="checkbox"/>		
Overall Level of Performance (all criteria within a column are met)			<input type="checkbox"/>

You are advised to spend 35 minutes answering the questions in this booklet.

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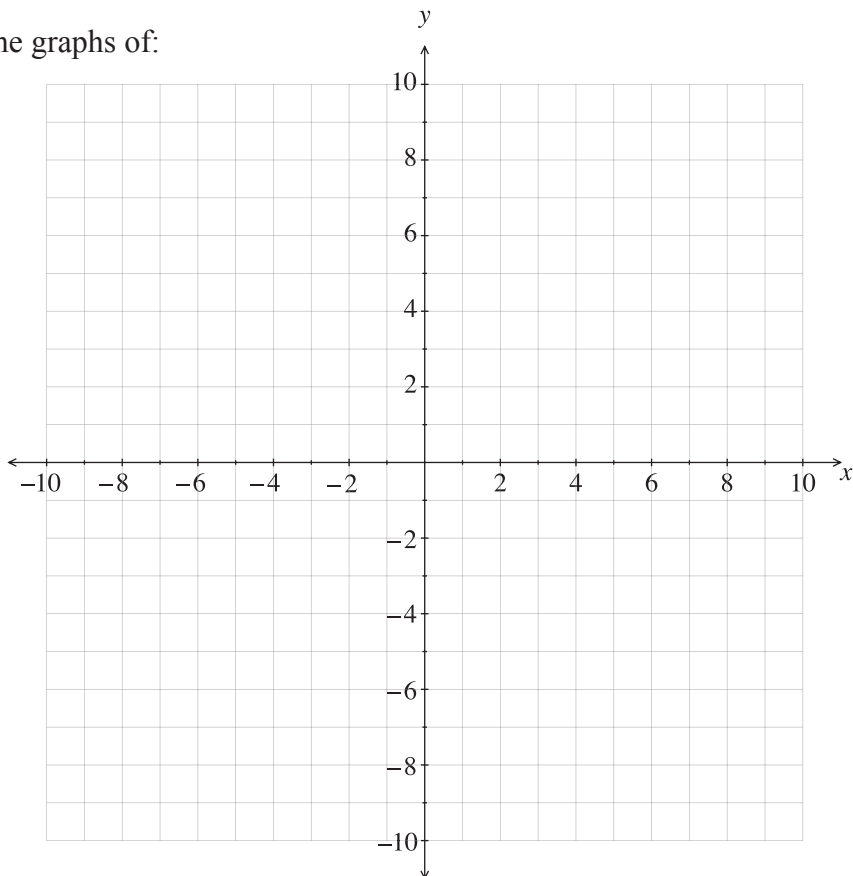
Touch Football

You should show **ALL** working.

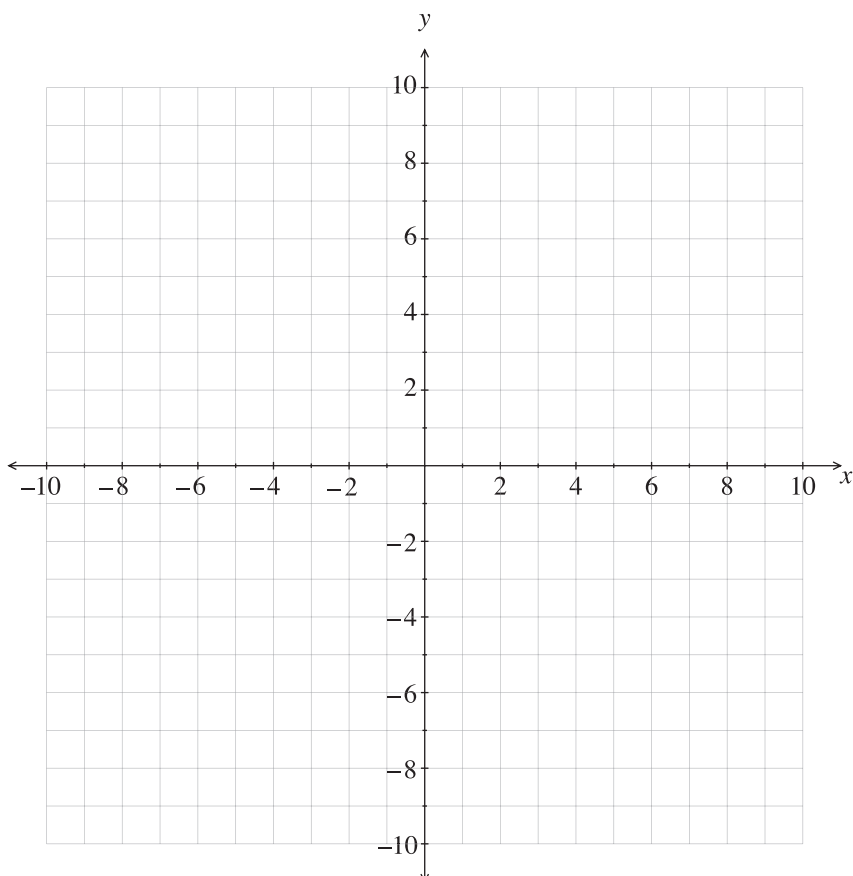
QUESTION ONE

Use the grids alongside to draw the graphs of:

(a) $x = 6$

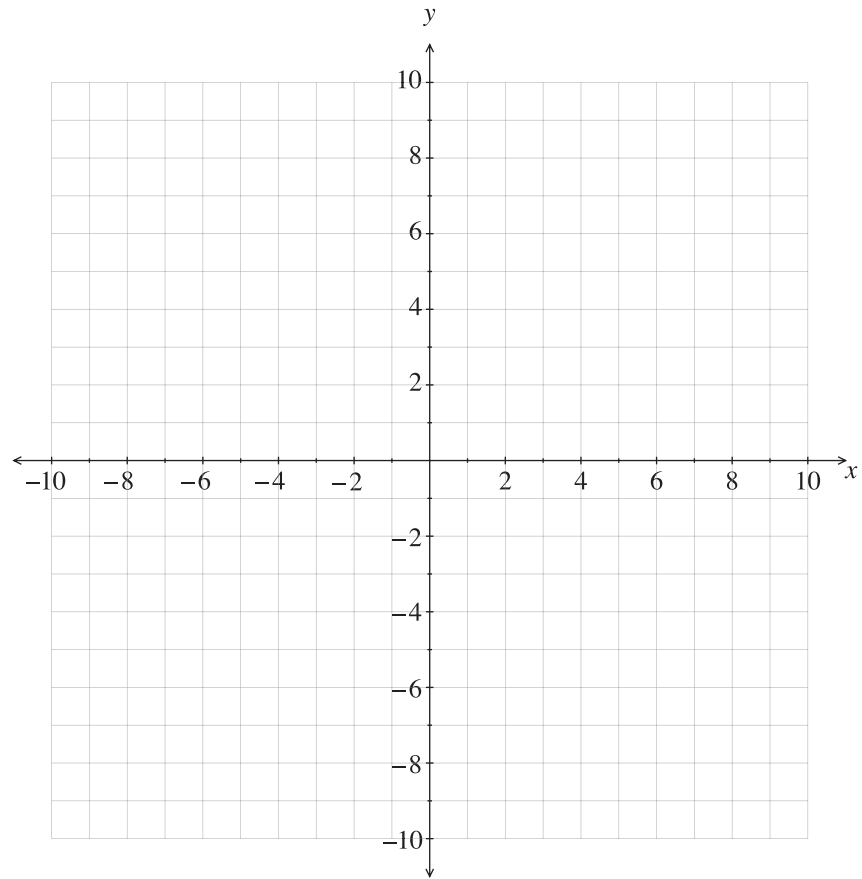


(b) $y = (x - 4)(x + 2)$



Note: If you need to redraw either of these graphs, or the graph in part (c) following, use page 10.

(c) $y = 3x - 6$

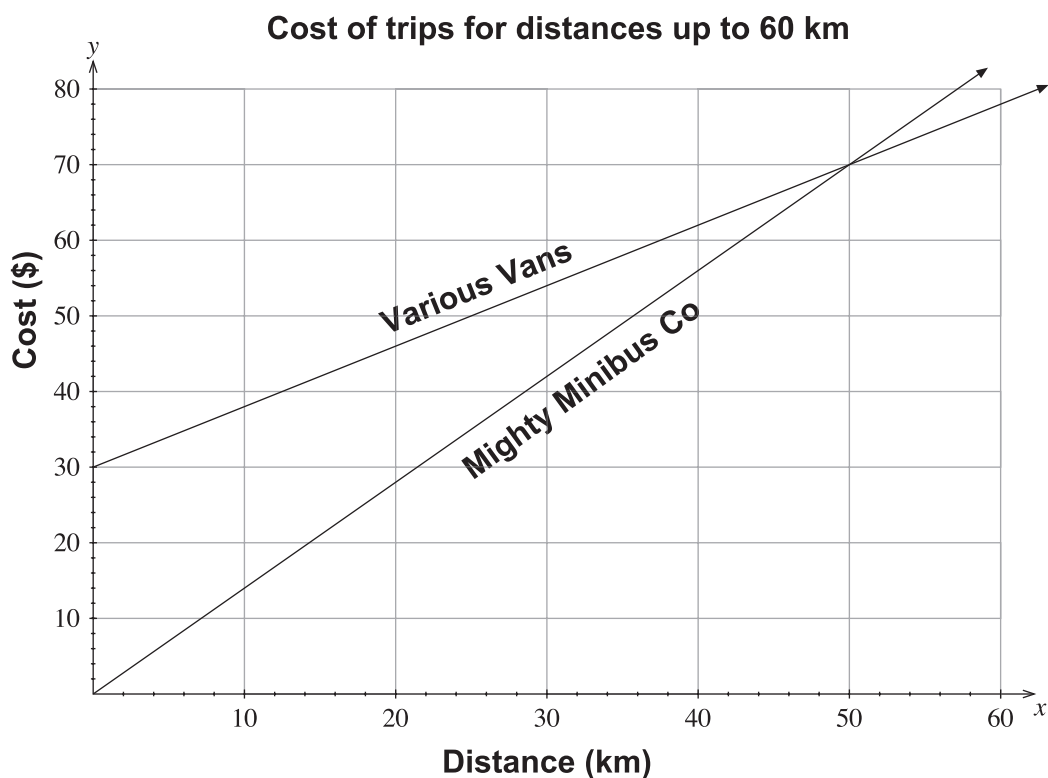


QUESTION TWO

Jim is organising the transport to the season's games for his Touch team.

He gets quotes from the *Mighty Minibus Co* and *Various Vans* for a minibus.

Jim can use the graph below to work out the cost of a trip for each rental company.



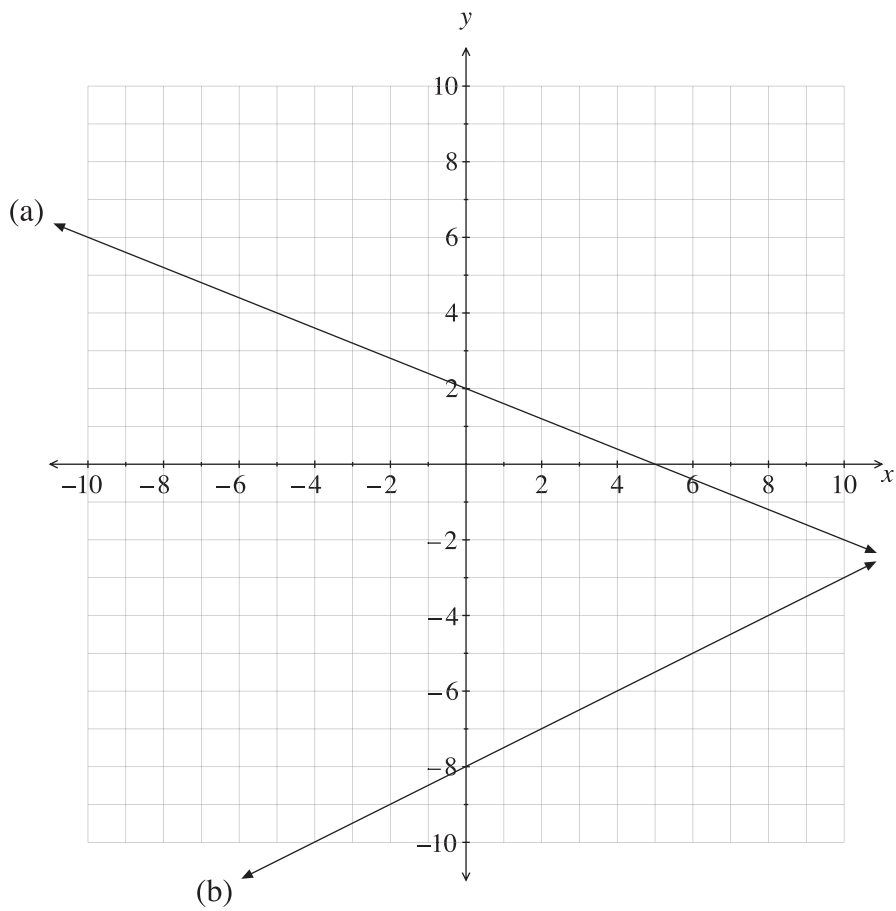
- (a) How much does the *Mighty Minibus Co* charge per kilometre?
-
-
- (b) Charges by *Various Vans* include a fixed fee for each trip. How much is this fixed fee?
-
- (c) For which length of trip do both companies charge the same?
-
- (d) Write the equation for the *Various Vans* graph.
-
-

QUESTION THREEAssessor's
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Write the equations of the lines drawn on the grid below:

(a) _____

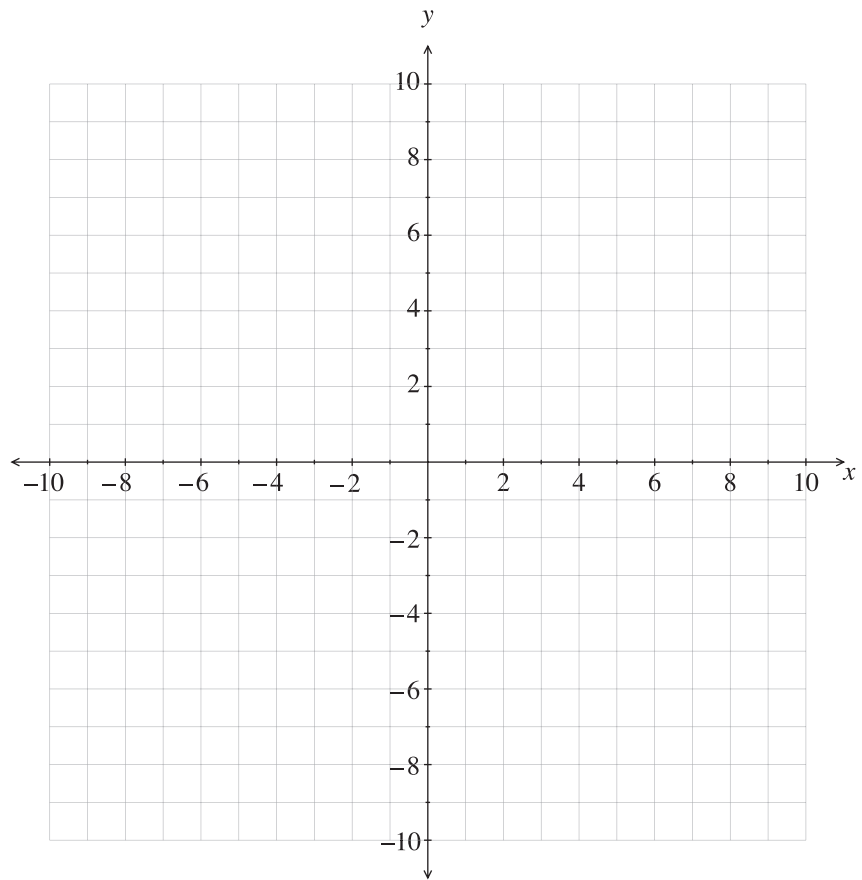
(b) _____



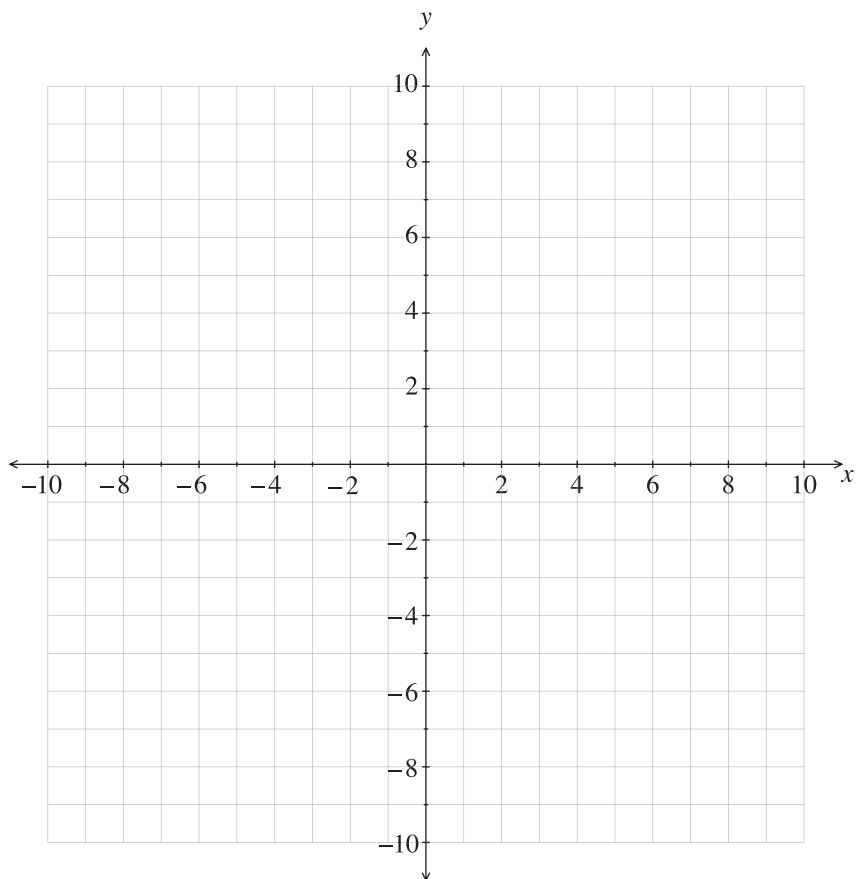
QUESTION FOURAssessor's
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Use the grids alongside to draw the graphs of:

(a) $2y - 3x = 18$

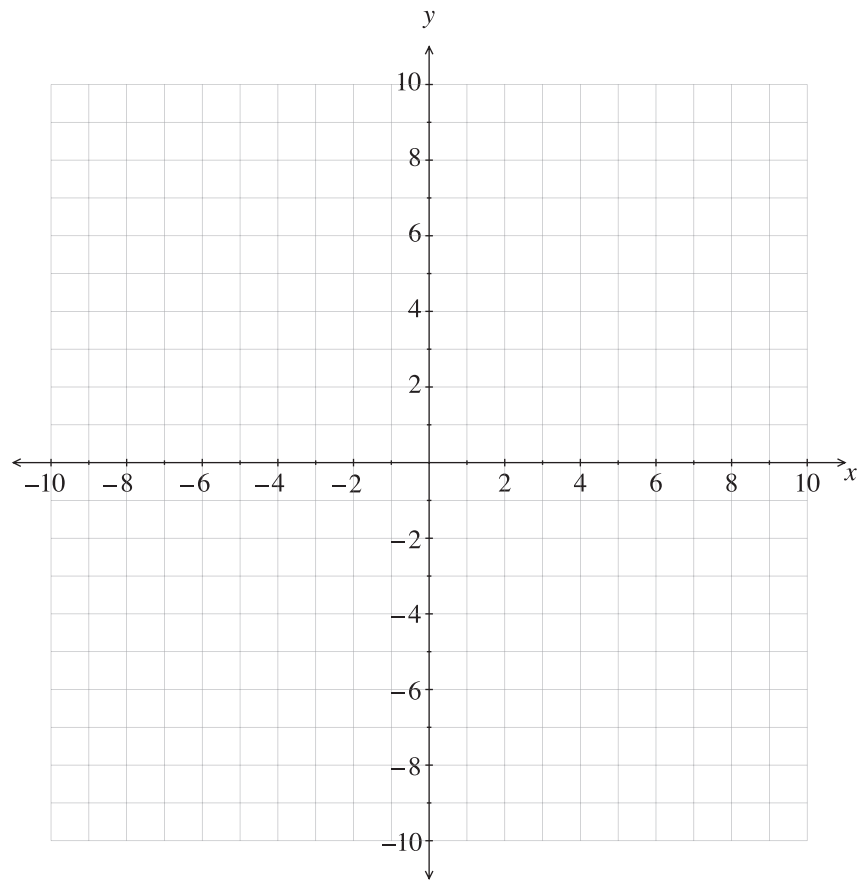


(b) $y = -x^2 + 6x - 8$
 $= (4 - x)(x - 2)$



Note: If you need to redraw either of these graphs, or the graph in part (c) following, use page 10.

(c) $y = 2x^2 + 8x$



QUESTION FIVE

The Touch team is warming up before the game.

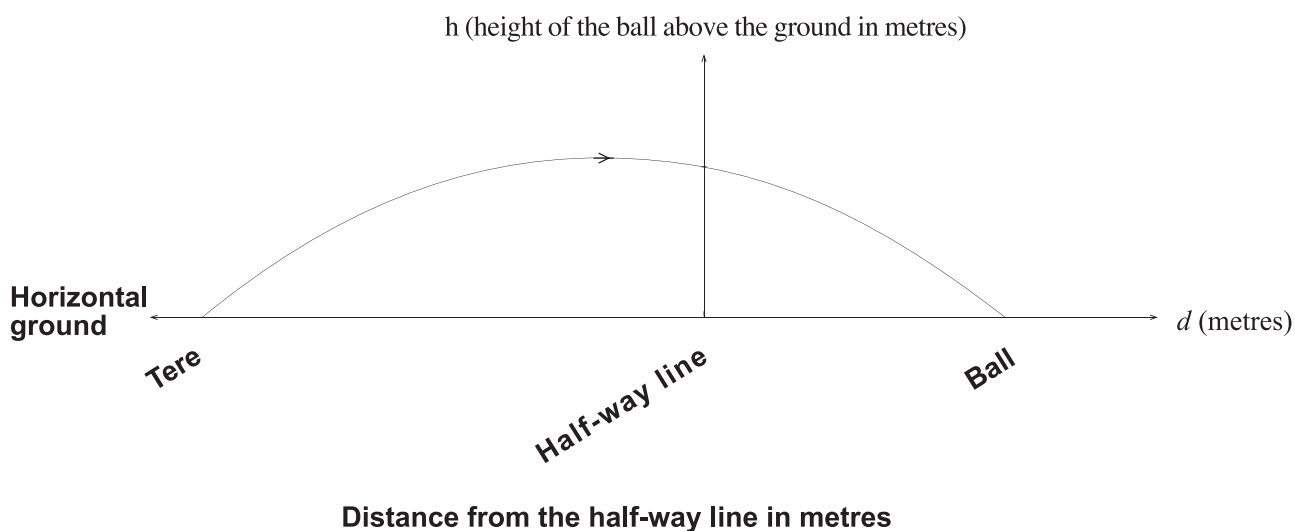
Tere is famous for her passes “off the ground”.

The graph below shows one of her passes.

The equation of the path of the ball is

$$h = \frac{(6-d)(d+10)}{20}, \text{ where } d \text{ is the distance in metres}$$

from the half-way line, and h is the height in metres of the ball above the ground.



- (a) How far away from Tere does the ball land?

- (b) What is the maximum height the ball reaches?
You should find this as accurately as you can.

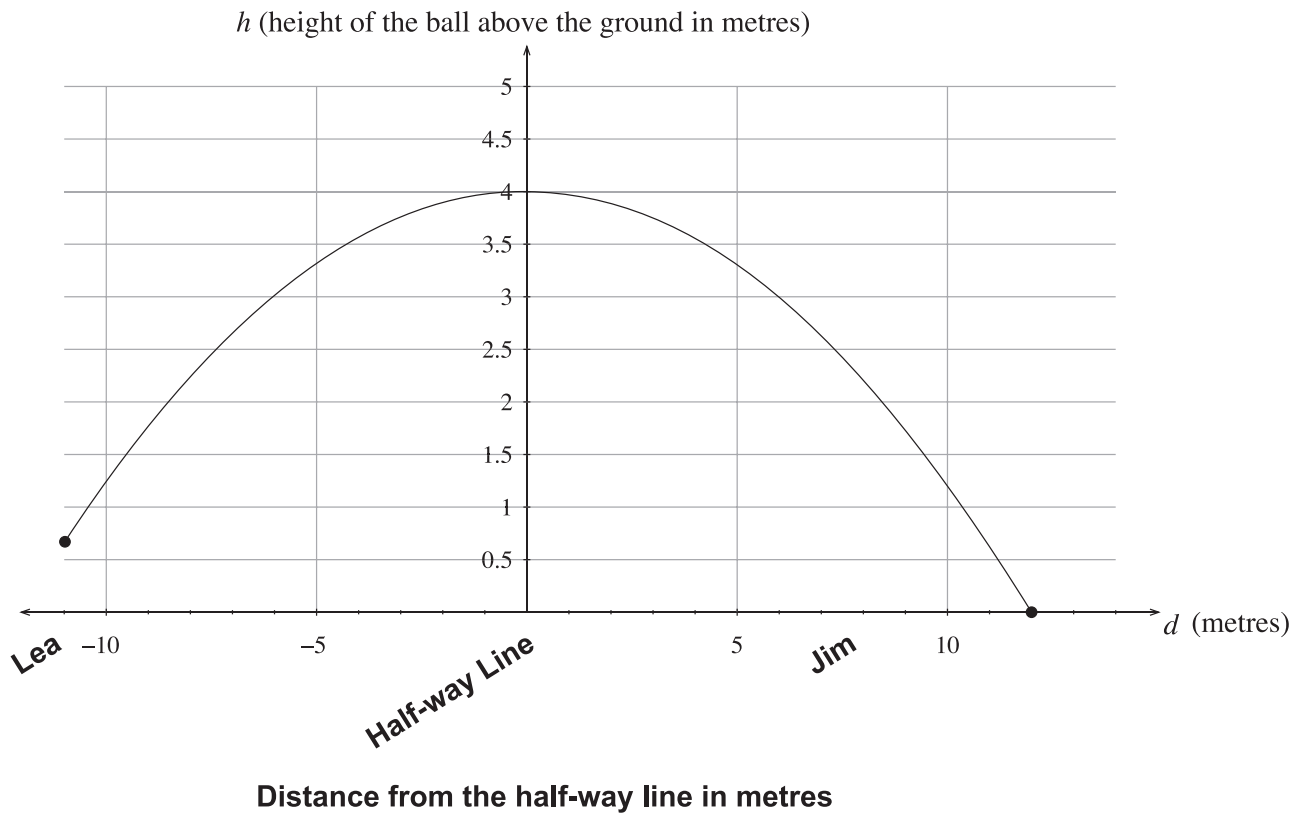
- (c) What is the height of the ball when it crosses the half-way line?

QUESTION SIXAssessor's
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The Touch team is still warming up before the game.

Lea is 11 metres from the half-way line.

Lea passes the ball towards Jim and it travels as shown in the graph below.



Jim is standing 7 metres from the half-way line on the opposite side to Lea.
He can reach up a maximum height of 2.2 metres.

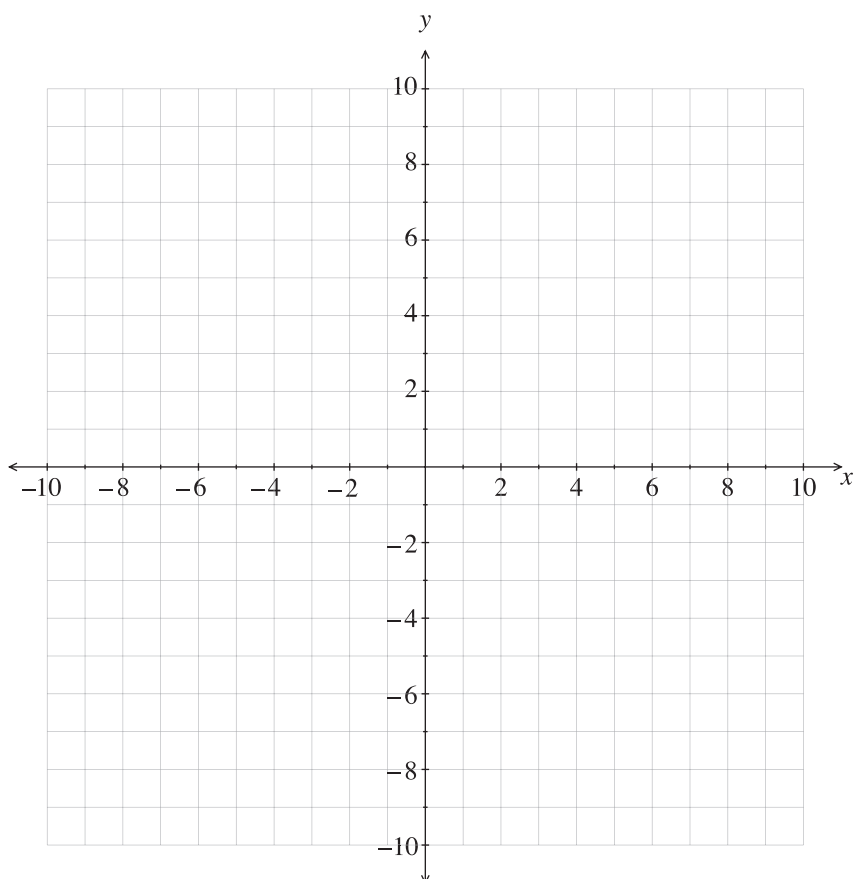
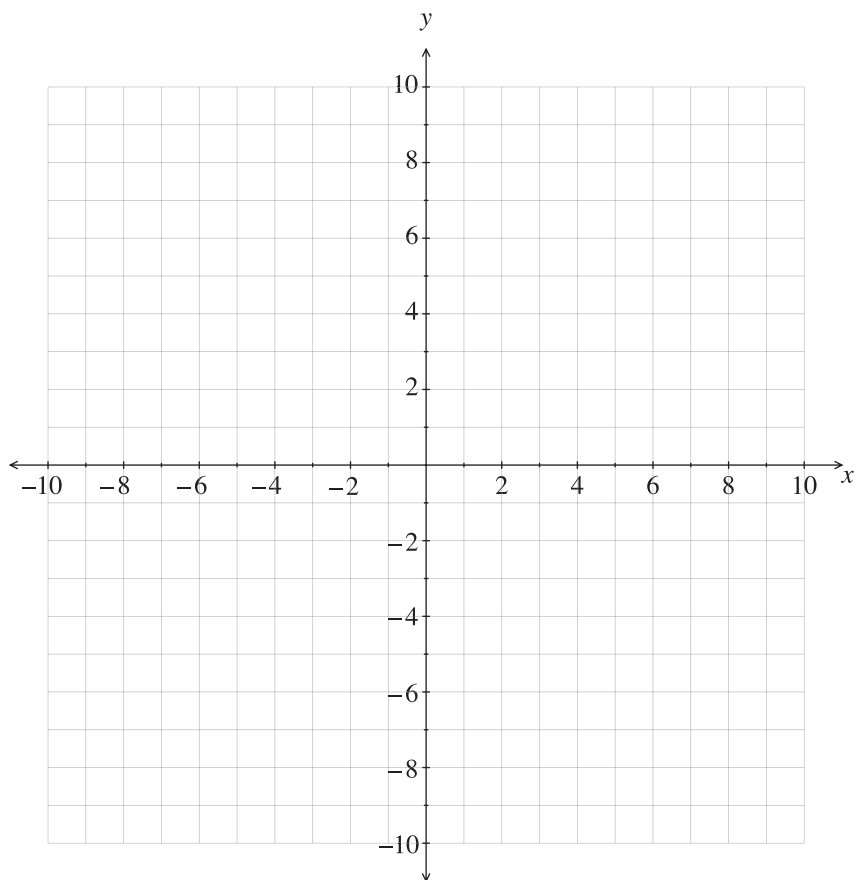
Will he be able to touch the ball as it goes over his head?

You must use calculations to support your answer.

Use this page to redraw your graphs if you wish.

Clearly label each graph with the question number.

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**Extra paper for continuation of answers if required.
Clearly number the question.**

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Question Number	Answer
1	1. The first step in the process of creating a business plan is to conduct a market research. This involves identifying the target market, understanding the needs and preferences of the customers, and analyzing the competitive landscape. Market research helps in making informed decisions about the products and services to offer, the pricing strategy, and the distribution channels.
2	2. The second step is to develop a business model. This involves determining how the business will generate revenue and sustain itself. It includes identifying the value proposition, the revenue streams, and the cost structure. A clear business model is essential for attracting investors and securing financing.
3	3. The third step is to create a financial plan. This involves projecting the financial performance of the business over a period of time. It includes estimating the startup costs, the operating expenses, the revenue, and the profit. A financial plan provides a clear picture of the business's financial health and helps in making decisions about the funding requirements and the break-even point.
4	4. The fourth step is to develop a marketing and sales strategy. This involves identifying the target market, understanding the competitive landscape, and developing a plan to reach the customers and generate sales. It includes determining the marketing channels, the promotional activities, and the sales process. A well-defined marketing and sales strategy is crucial for the success of the business.
5	5. The fifth step is to create an implementation plan. This involves detailing the specific actions and tasks that need to be completed to launch the business. It includes identifying the key milestones, the responsible parties, and the timeline. An implementation plan ensures that the business is launched on time and within budget.

**Extra paper for continuation of answers if required.
Clearly number the question.**

**Assessor's
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Question Number	Answer
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